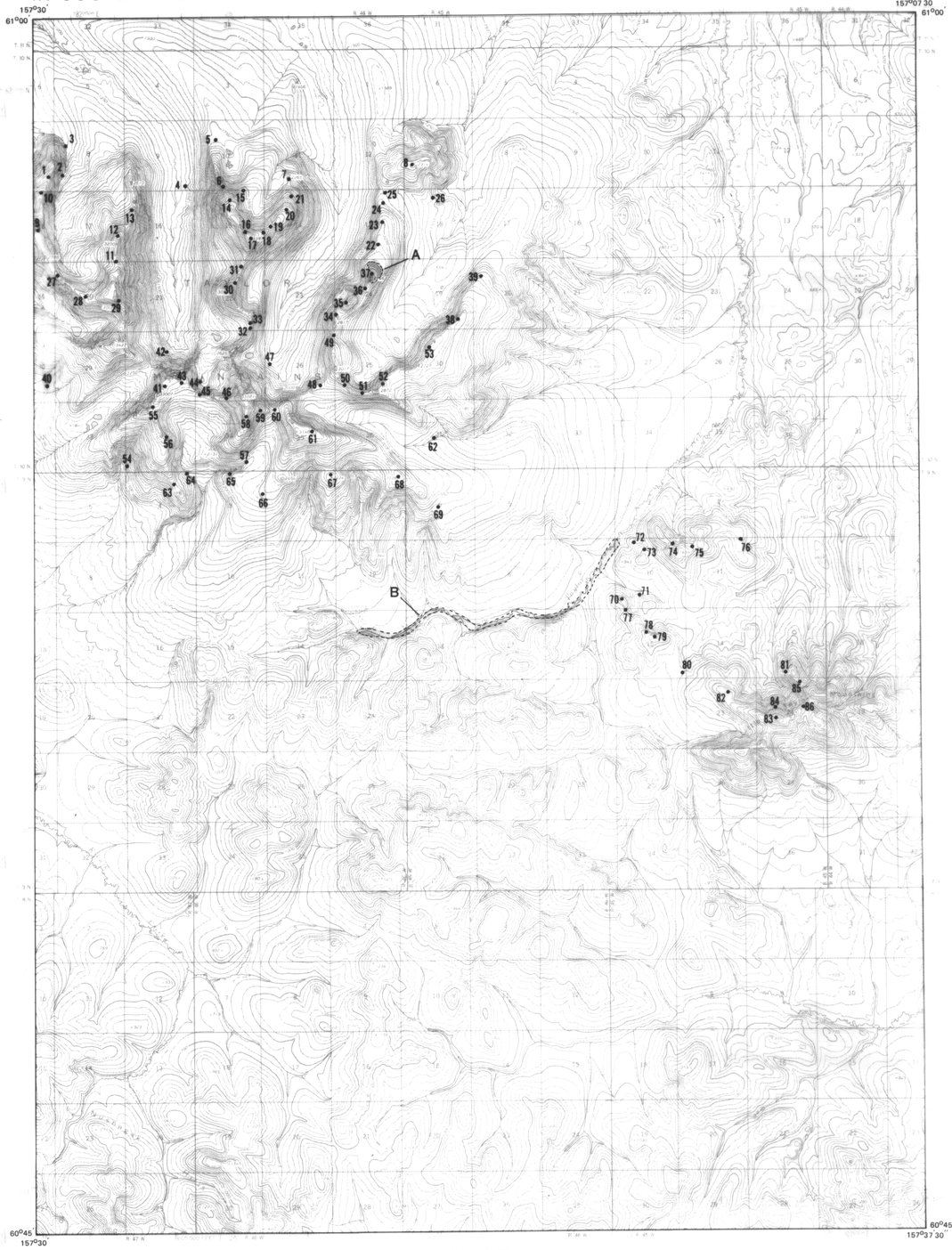
ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
IN COOPERATION WITH THE U.S. GEOLOGICAL SURVEY

REPORT OF INVESTIGATIONS 85-2

TAYLOR MOUNTAINS D-4 QUADRANGLE



Base from U.S. Geological Survey
Taylor Mountains D-4, 1954,
Quadrangle, Alaska

ALASKA

QUADRANGLE LOCATION

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 50 FEET

DATUM MEAN SEA LEVEL

APPROXIMATE MEAN DECLINATION, 1984

TRUE NORTH
MAGNETIC N

MAP SYMBOLS

78 - map number; corresponds to table numbers

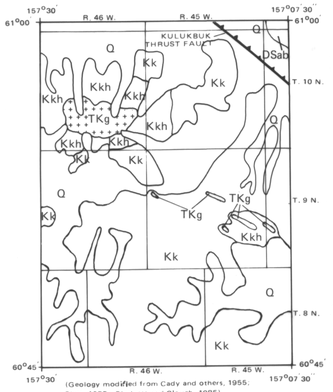
A - mine or prospect (table 4)

- extent of mine or prospect

INTRODUCTION

This map is one in a series of geologic data bases (scale 1:63,360) from southwest Alaska. The series is scheduled for release by DGGS during 1985. Each map is a summary of geologic field data, analytical data, fossil reports, resource information, and land status available for that quadrangle. Geologic data were obtained primarily from U.S. Geological Survey (USGS) field notes collected from 1941 to 1975. Field locations were replotted on modern topographic base maps from the original trimetrogon air photos and reconnaissance topographic maps. The map-numbering sequence, which follows a normal written-page progression using the township and range mile-square blocks, starts in the northwest corner of the quadrangle and ends in the southeast corner. Where necessary, original station numbers were modified to fit the format: year, geologist, and field number (table 1). Initial station numbers commonly consisted of the date followed by a number for each observation point, starting each day with number 1, for example, 6/11-1. The modified number preserves the original number, but adds the year and geologist to eliminate confusion and ambiguity. For example, 47Hr6/11-1 was the first station occupied by Joseph M. Hoare on June 11, 1947. Rock descriptions (table 2) and structural data (table 3) were compiled from field notes exactly as written; no attempt was made to modify or interpret the original data. We appreciate the review by M.S. Robinson (DGGS) and Stephen E. Box (USGS).

GENERALIZED DISTRIBUTION OF ROCK UNITS

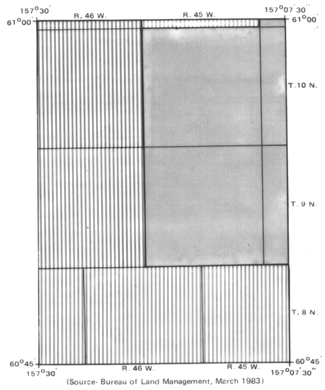


(Geology modified from Cady and others, 1955; Platt, 1955; Blodgett and Clough, 1985)

EXPLANATION

- Q - Quaternary deposits
- TKg - Granite, porphyritic granite, and dikes and sills of rhyolite
- Kkh - Hornfelsed Kuskokwim Group sedimentary rocks
- Kk - Kuskokwim Group sedimentary rocks
- DSab - Early Devonian to Late Silurian algal boundstone

LAND STATUS



(Source: Bureau of Land Management, March 1983)

State selected

State tentatively approved

Table 1. Correspondence of map numbers with field stations.

Map no.	Field station*	Map no.	Field station*	Map no.	Field station*	Map no.	Field station*
1	44Hr6/29-6	20	44Hr7/4-4	45	44Hr7/10-8	68	44Hr7/9-2
	44Ca6/29-6	21	44Hr7/4-5	46	44Hr7/10-7	69	44Hr7/9-1
2	44Ca6/28-12	22	44Hr7/6-6	47	44Hr7/6-1	70	44Hr7/8-4
	44Hr6/28-13	23	44Hr7/6-7	48	44Hr7/7-1	71	44Hr7/8-3
3	44Ca6/28-13	24	44Hr7/6-8	49	83MR234	72	44Hr7/8-1
	44Hr6/28-14	25	44Hr7/6-9		83MR235	73	44Hr7/8-2
4	83TS88	26	44Hr7/6-11		83GA231	74	44Hr7/8-11
5	83TS87	27	44Ca6/28-6	50	44Hr7/6-17	75	44Hr7/8-10
6	44Hr7/4-9	28	44Ca6/28-7	51	44Hr7/6-16	76	44Hr7/8-10B
7	44Hr7/4-6		44Hr6/28-8	52	44Hr7/6-15	77	44Hr7/8-4B
8	44Hr7/6-10	29	44Ca6/28-8	53	44Hr7/6-14	78	44Hr7/8-5
9	44Hr6/28-6		44Hr6/28-9	54	44Ca7/11-3	79	44Hr7/8-5A
	44Ca6/28-5	30	44Hr7/4-1		44Hr7/11-3	80	44Hr7/8-5B
10	44Ca6/29-5		44Ca7/4-1a	55	44Hr7/10-10	81	44Hr7/8-9
	44Hr6/29-5	31	44Hr7/4-1B	56	44Hr7/10-11	82	44Hr7/8-5C
11	44Ca6/28-9	32	44Hr7/5-3	57	44Hr7/10-2	83	44Hr7/8-5D
	44Hr6/28-10	33	82MR309	58	44Hr7/10-6	84	44Hr7/8-6
12	44Ca6/28-10	34	44Hr7/6-2	59	44Hr7/10-5	85	44Hr7/8-8
	44Hr6/28-11	35	44Hr7/6-3	60	44Hr7/10-3	86	44Hr7/8-7
13	44Ca6/28-11	36	44Hr7/6-4	61	44Hr7/10-4		
	44Hr6/28-12	37	44Hr7/6-5	62	44Hr7/7-2		
14	44Hr7/4-8	38	44Hr7/6-13	63	44Ca7/11-2		
15	44Hr7/4-7	39	44Hr7/6-12		44Hr7/11-2		
16	44Hr7/4-2B	40	44Ca7/11-4	64	44Hr7/11-1		
17	44Hr7/4-2	41	44Hr7/10-9		44Ca7/11-1		
	83TS86	42	44Hr7/5-1	65	44Hr7/10-1		
18	44Hr7/4-3	43	44Hr7/10-8B	66	44Hr7/9-4		
19	44Hr7/4-3B	44	44Hr7/5-2	67	44HR7/9-3		

*Year-geologist-month/day-field number or year-geologist-field number; Hr = Joseph Hoare, Ca = WM.Cady, MR = MS.Robinson, TS = TN.Smith, GA = G.A. Allegro

Table 3. Structural data.

Map no.	Attitude of bedding and volcanic flow planes (f)	Other structural data	Map no.	Attitude of bedding and volcanic flow planes (f)	Other structural data
1	N77E, 37NW	right side up	41		joint N63E, 53SE
2	N68W, 54NE				joint N67W, 49NE
	N58W, 54NE		43		joint N08E, 90
3	N64W, 49NE		45		joint N43W, 62NE
5	Dipping to north		46	N23W, 42NE	
6	N53W, 33NE		47		joint N10W, 88NE
7	N65E, 27NW				joint N68W, 82NE
8	N70E, 26NW		50		joint N65W, 90
9	N72W, 23NE				joint N40E, 85NW
	N74W, 30NE		51	N20W, 29NE	
10	N10E, 53NW	right side up	52	N10W, 16NE	
	N10E, 51NW		53	N08W, 40NE	
11	N20W, 24NE		54	N70W, 38NE	
12	N65W, 55NE		55	N71E, 40NW	
13	N23W, 13NE		56	N79W, 32SW	
14	N58W, 33NE		57	N22W, 89NE	
15	N07E, 47NW		58	N65W, 45NE	
16	N67W, 14NE		59	N52W, 21NE	
17	N85E, 38NW	contact NE, dip NW	60		joint N85E, 65NW
18	N58W, 48NE		61	N40W, 35NE	
19	N56W, 30NE		62		fold plane N14W, 68NE
20	N42W, 52NE				
21	EW, 35N		64	N43W, 87SW	
22	N80W, 25NE		65	N41E, 49SE	
23	N62W, 38NE			N35W, 65NE	
24	N55W, 54NE		66	N85W, 58SW	
26	N68W, 23NE		67	E-W, ??	
27	N52W, 45NE	overturned	68	N56W, 45SW	
		fracture cleavage	69	N80E, 32SE	
		N40E, 40NW	71	N80W, 46SW	
28	N40W, 42NE		72	N55W, 09SW	cleavage N57E, 56SE
	N45W, 43NE				
29	N48W, 47NE	contact N40E, 90(?)	73	N58W, 47SW	
			77	N70E, 38N	cleavage N85E, 38SE
30	N70W, 80SW				sill E-W strike
31		joint N50W, 80SW	79		
32		joint N50W, 81SW			sill E-W, ??
		joint N08E, 53SE	80		
34		joint N48W, 31NE	81	N05E, 11SE	
35	N66W, 19NE		82		sill E-W, ??
36	N60W, 28NE		83	N68W, 37SW	
37	N69W, 23NE		84	N83W, 39SW	contact N88E, 37SE
38	N25W, 10NE		85	N68W, 38NE	
39	N35W, 20NE			N83E, 68SE	
40	N15W, 37SW		86		fold axis N68W, 90
	N13W, 35SW				

Table 5. Radiometric age data.

Map no.	Sample no.	Rock type	Mineral dated	K_2O (%)	Sample wt (g)	$^{40}Ar_{rad}$ (mol/g) x 10^{-11}	$\frac{^{40}Ar_{rad}}{^{40}K} \times 10^{-3}$	$\frac{^{40}Ar_{rad}}{^{40}Ar_{total}}$	Age ± 1δ (m.y.)
33	82MR309	Granite	Biotite	8.580	0.5417	82.1	3.86	0.786	65.3 ± 2.0
				8.580					
				$\bar{x}$ = 8.580					
49	83MR234C	Porphyritic granite	Biotite	7.363	0.2343	72.8	4.00	0.590	67.6 ± 2.0
				7.370					
				7.296					
				$\bar{x}$ = 7.343					
49	83MR235	Porphyritic granite	Biotite	9.110	0.3118	87.3	3.85	0.939	65.0 ± 2.0
				9.200					
				$\bar{x}$ = 9.155					
49	83MR235	Porphyritic granite	White mica	9.816	0.1865	93.1	3.82	0.872	64.5 ± 1.9
				9.876					
				$\bar{x}$ = 9.846					

Note: rad = radiogenic; δ = standard deviation; $\lambda_e + \lambda'_e = 0.581 \times 10^{-10}yr^{-1}$; $\lambda_B = 4.962 \times 10^{-10}yr^{-1}$; $^{40}K/K_{total} = 1.67 \times 10^{-4}$ mol/mol
K-Ar age determinations by J.D. Blum and D.L. Turner, Alaska Division of Geological and Geophysical Surveys, University of Alaska, Fairbanks, Geophysical Institute Cooperative Geochronology Laboratory.

REFERENCES CITED

Blodgett, R.B., and Clough, J.B., 1985, The Nixon Fork terrane - Part of an in-situ peninsular extension of the North American Paleozoic continent: Geological Society of America, Abstracts with Programs [abs.] [in press].

Cady, W.M., Wallace, R.E., Hoare, J.M., and Webber, E.J., 1955, The central Kuskokwim region, Alaska: U.S. Geological Survey Professional Paper 268, 132 p.

Cobb, E.H., 1976, Summary of references to mineral occurrences (other than mineral fuels and construction materials) in the Dillingham, Sleetmute, and Taylor Mountains Quadrangles, Alaska: U.S. Geological Survey Open-file Report 76-606, 92 p.

Platt, J.N., 1955, Photogeologic interpretation of the Taylor Mountains Quadrangle: U.S. Geological Survey unpublished data, scale 1:250,000, 1 sheet.

Table 2. Rock descriptions from field notes.

Map no.	Rock description
1	Slightly metamorphosed, interbedded shale and graywacke with ripple marks and fracture cleavage
2	Metamorphosed sedimentary rocks with cleavage
3	Contact between interbedded graywacke and shale and metasedimentary rocks
4	Porphyritic biotite-quartz diorite with plagioclase laths to 5 cm
5	Hornfelsed shale
6	Contact between porphyroblastic metagraywacke and porphyritic granite
7	Massive, porphyroblastic metagraywacke
8	Unmetamorphosed shale, graywacke, and fine conglomerate
9	Graywacke and shale
10	Slightly metamorphosed, interbedded graywacke and mica-bearing shale
11	Contact between metasedimentary rocks and granite
12	Metasedimentary rocks; strike across valley to west
13	Contact between metasedimentary rocks and granite
14	Porphyroblastic metagraywacke
15	Porphyroblastic metagraywacke
16	Metasedimentary rocks
17	Contact between glassy metasedidents and medium pebble conglomerate and granite
18	Porphyroblastic metasedimentary rocks
19	Metasedimentary rocks
20	Metagraywacke and granite apophysis
21	Porphyroblastic metasedimentary rocks with fracture cleavage
22	Slabby, rhombohedral-fracturing, porphyroblastic metagraywacke
23	Porphyroblastic metagraywacke
24	Thinly bedded, slabby, coarse-grained, porphyroblastic metagraywacke
25	Contact between metasediments and relatively unmetamorphosed rocks
26	Contact between metasediments and relatively unmetamorphosed rocks
27	Massive graywacke and shale(?) with bedding and fracture cleavage
28	Massive, highly recrystallized, fine-grained graywacke and shale
29	Contact between coarse-grained granite and metasedimentary rocks
30	Coarse-grained, orthoclase-porphyritic granite with lavender tourmaline, abundant biotite, and aplite dikes
31	Porphyritic granite
32	Porphyritic granite with 3-cm-long tourmaline in 40-cm-wide pegmatite vein, and a 50-cm-wide lamprophyre dike
33	Granite
34	Porphyritic granite
35	Porphyritic granite, graphic granite with 2-cm-long tourmaline and porphyroblastic metagraywacke
36	Slabby metagraywacke
37	Slabby to massive, porphyroblastic metagraywacke
38	Metagraywacke
39	Massive sedimentary rocks
40	Contact between porphyroblastic and unmetamorphosed graywacke and shale
41	Granite
42	Porphyritic granite
43	Granite
44	Orthoclase (8 cm long)-porphyritic granite
45	Granite; finer grained than average
46	Contact between granite and metagraywacke
47	Porphyritic granite
48	Porphyritic granite
49	Coarse-grained, porphyritic granite with 10 cm-thick quartz-tourmaline veins and garnet-bearing aplite dikes
50	Contact between coarse-grained, orthoclase-porphyritic granite and metasedimentary rocks
51	Contact between fine-grained granite and porphyroblastic, metasedimentary rocks
52	Metasedimentary rocks
53	Metagraywacke
54	Porphyroblastic metagraywacke
55	Contact between orthoclase-porphyritic granite and massive metagraywacke
56	Slabby metagraywacke
57	Interbedded, porphyritic shale and graywacke
58	Metagraywacke
59	Roof pendant of metagraywacke in granite
60	Porphyritic granite
61	Contact between porphyroblastic graywacke and porphyritic granite
62	Tightly folded, slightly metamorphosed, flinty shale and graywacke with considerable mica
63	Gradational contact between metagraywacke and shale and unmetamorphosed rocks
64	Metagraywacke
65	Porphyroblastic graywacke
66	Porphyroblastic metagraywacke and shale with lower grade metamorphic rocks to southeast
67	Contact between metasediments and unmetamorphosed rocks
68	Contact between metasediments and unmetamorphosed rocks
69	Slightly metamorphosed shale and graywacke
70	(Float) coarse-grained, porphyritic, rhyolite dike and shale and graywacke
71	Interbedded, very thin bedded, micaceous shale and graywacke
72	Pyritized rhyolite, micaceous graywacke, and fracture-cleavage-dominated shale
73	Shale with bedding-plane cleavage
74	Interbedded graywacke and shale
75	(Float) shale and graywacke with quartz veins and rhyolite sill
76	(Float) rhyolite
77	Shale in small, tight fold
78	(Float) coarse-grained rhyolite or granite
79	Tabular bodies of porphyritic rhyolite (sill?)
80	Tabular body of porphyritic rhyolite
81	Interbedded graywacke with minor contorted shale with prominent fracture cleavage
82	Tabular body of porphyritic rhyolite
83	Interbedded pyrite and mica-bearing shale and graywacke
84	Contact between pyritized, porphyritic, rhyolite sill and shale and graywacke
85	Interbedded shale and graywacke with abundant milky quartz float
86	Graywacke and shale in small anticline

Table 4. Mines and prospects (modified from Cobb, 1976).

Map letter	Name	Map coordinates	Development category	Resources*	Type	Brief description	Principal reference
A	Stevens Creek	60°57'N., 157°21'W approx.	p	W	Vein	Wolframite in vein-quartz float from hornfelsed Kuskokwim Group sedimentary rocks.	Cobb, 1976, location 7, p. 76.
B	Taylor Creek	60°53'-60°54'N, 157°15'-157°22'W	M	Au (Hg, Sn)	Placer	Placer deposits contain gold, cinnabar, cassiterite, and pyrite. Production mainly in 1950-51, was about 2,500 ounces of fine gold. Placers were probably derived from contact zones around felsic bodies that hornfelsed clastic Cretaceous rocks.	Cobb, 1976, location 11, p. 77.

Key: Development category
M - Mine with known production. Mine is defined as a mineral deposit with recorded production.
p - Prospect work, but no known activity since 1960. Prospect is defined as a deposit that has been staked with subsequent exploratory or development work, but has no known production.
*Minor constituents or potential byproducts in parentheses.

Table 6. Chemical data.

Map no.	30*	33+	49+
Sample no.	44ACa26	82MR309	83MR234
Lab. no.	- -	15187	15239
Rock type	Porphyritic granite	Granite	Porphyritic granite
Oxides	Percentage		
SiO_2	70.48	69.24	68.50
Al_2O_3	13.97	14.12	15.41
Fe_2O_3	0.43	2.72	1.20
FeO	3.21	3.14	3.15
MgO	0.29	0.92	0.85
CaO	1.18	1.49	1.52
Na_2O	2.77	3.25	3.04
K_2O	5.48	4.04	4.95
TiO_2	0.45	0.57	0.54
P_2O_5	0.22	0.21	0.32
MnO	0.04	0.09	0.08
LOI	0.90	0.53	0.62
TOTAL	99.85	100.32	100.16
CIPW normative minerals			
Q	29.27	29.72	26.29
C	1.89	2.20	3.08
or	32.87	23.92	29.47
ab	23.79	27.56	25.92
an	4.48	6.03	5.49
hy	5.68	5.05	6.21
mg	0.63	3.95	1.75
il	0.87	- -	1.03
ap	0.52	0.49	0.75
TOTAL	100.00	98.92	99.99

*Analyses by USGS Chemistry and Physics laboratory, J.G. Fairchild analyst.
+Analyses by X-ray fluorescence, DGGS Minerals Laboratory.
LOI = Loss on ignition.

COMPILATION OF GEOLOGIC DATA FROM THE TAYLOR MOUNTAINS D-4 QUADRANGLE, SOUTHWESTERN ALASKA

Compiled by

Rocky R. Reifenstuhl, John Decker, and Warren L. Coonrad

1985